

**MOTIVATION FACTORS OF SUCCESSFUL
ACADEMIC RESEARCH COMMERCIALISATION
AMONG MALAYSIAN TECHNICAL UNIVERSITIES**

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UNIVERSITIES**

By

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**Thesis Submitted to the
Othman Yeop Abdullah Graduate School of Business,
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ABSTRACT

The Malaysian government has been striving to provide an environment conducive to research commercialisation in the country. Despite the efforts, the targeted research commercialisation rate has yet to be achieved. As such, it is important to understand the motivation of the academic researchers who had successfully commercialised their research. Literature classifies motivation factors as extrinsic, intrinsic, and prosocial, which might exist independently or in a combination (mixed-motivation). Within the academic research commercialisation context, a considerable number of existing studies have discussed the role of extrinsic motivation factors, while the issues of intrinsic and prosocial factors have not been much studied. Thus, this study aimed to further understand the role of each motivation factor as well as the role of mixed-motivation factors among academic researchers who had successfully commercialised their research results. In achieving the study's objective, this study utilised the Self-Concordance Theory as the study's framework and applied a qualitative case study approach. The informants in the study were the academic researchers from four Malaysian technical universities. The research project was selected as the unit of analysis. The study revealed that academic researchers were highly motivated by the combination of all three motivation factors (mixed-motivation factors) in supporting their commercialisation activities. The recurring themes for all the successful research projects were passion and the personal traits of the academic researchers. The results of this study enrich the Self-Concordance Theory through highlighting the role of the mixed-motivation factors in explaining that the goals of academic researchers' commercialisation activities were closely linked to their personal goals.

Keywords: academic research commercialisation, extrinsic motivation factors, intrinsic motivation factors, prosocial motivation factors, Self- Concordance theory.

ABSTRAK

Kerajaan Malaysia telah berusaha untuk menyediakan persekitaran yang kondusif bagi pengkomersialan penyelidikan di negara ini. Walaupun pelbagai usaha telah dijalankan, kadar pengkomersialan yang disasarkan masih belum dicapai. Oleh itu, adalah penting untuk memahami motivasi penyelidik yang telah berjaya mengkomersialkan hasil penyelidikan mereka. Literatur telah mengklasifikasikan faktor-faktor motivasi sebagai ekstrinsik, intrinsik, dan prososial yang mungkin wujud secara bersendirian atau berkumpulan (motivasi bercampur). Dalam konteks pengkomersialan penyelidikan akademik, sebilangan besar kajian yang sedia ada telah membincangkan peranan faktor-faktor motivasi ekstrinsik, manakala faktor intrinsik dan prososial pula kurang dikaji. Oleh itu, kajian ini bertujuan untuk lebih memahami peranan setiap faktor motivasi serta peranan faktor motivasi bercampur di kalangan penyelidik yang telah berjaya mengkomersilkan hasil penyelidikan mereka. Dalam mencapai objektif kajian, kajian ini menggunakan *Self-Concordance Theory* sebagai rangka kerja kajian dan mengaplikasikan pendekatan kajian kes kualitatif. Informan-informan dalam kajian ini ialah para penyelidik daripada empat universiti teknikal di Malaysia yang telah berjaya mengkomersialkan hasil penyelidikan mereka. Projek penyelidikan telah dipilih sebagai unit analisis. Kajian ini mendedahkan bahawa penyelidik akademik didorong oleh gabungan ketiga-tiga faktor motivasi (faktor motivasi bercampur) dalam menyokong aktiviti pengkomersialan mereka. Elemen yang terdapat dalam kesemua projek penyelidikan yang berjaya adalah keghairahan dan sifat-sifat peribadi penyelidik. Hasil kajian ini memperkayakan *Self-Concordance Theory* dengan menonjolkan peranan faktor-faktor motivasi bercampur dalam menerangkan bahawa matlamat aktiviti pengkomersialan penyelidik selari dengan matlamat peribadi mereka sendiri.

Katakunci: pengkomersialan penyelidikan akademik, faktor-faktor motivasi ekstrinsik, faktor-faktor motivasi intrinsik, faktor-faktor motivasi prososial, *Self-Concordance Theory*.

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LIST OF ABBREVIATIONS

ATN	Australian Technology Network of Universities
AUTM	Association of University Technology Managers
CAQDAS	Computer-Aided Qualitative Data Analysis Software
CoE	Centre of Excellence
GDP	Gross Domestic Product
GERD	Gross Expenditure on Research and Development
IBS	Industrialised Building System
KPI	Key Performance Index
MNCs	Multinational Companies
MOHE	Malaysian Ministry of Higher Education
MOSTI	Malaysian Ministry of Science, Technology and Innovation
MTDC	Malaysian Technical Development Corporation
MTUN	Malaysian Technical Universities Network
MUCET	MTUN Conference on Engineering and Technology
R&D	Research and Development
RMC-MOHE	Research Management Centre of MOHE
RSE	Researchers-Scientists-Engineers
RUs	Research Universities
SDT	Self-Determination Theory
S&T	Science and Technology
TNB	Tenaga Nasional Berhad
TTO	Technology Transfer Office
UMP	Universiti Malaysia Pahang
UniMAP	Universiti Malaysia Perlis
US	United States of America
UTeM	Universiti Teknikal Malaysia
UTHM	Universiti Tun Hussein Onn Malaysia

CHAPTER ONE: INTRODUCTION

1.1 Research Background

In the 1800s, universities were widely known as a place to gain tertiary education. They were also perceived as the major supplier of human capital. Then, research activities were introduced as a source of exploring new knowledge either for inventions or innovations. In 1900s, developed countries began to commercialise their research output in order to gain financial returns. Besides generating monetary returns, the commercialisation activity aimed to help the nation's economic growth by creating job opportunities as well as improving the quality of life of the citizens (AUTM, 2012). In 2000s, these research activities have become more important to drive higher economic performance and generate more funds to support the university operation (Philpott, Dooley, Reilly, Lupton, & O'Reilly, 2011; Rothaermel, Agung, & Jiang, 2007). The research activities also benefit the companies that have gained from the technology transfer and to the community that utilises the end products.

Commercialisation of research outputs is now a concern of developing Asian countries such as Thailand (Rigg, Salamanca, & Parnwell, 2012; Wonglimpiyarat & Yuberk, 2005), Indonesia (Dhewanto & Umam, 2009; Lakitan, 2013), and Malaysia (Heng, Amran, & Aslan, 2012; Ismail, Senin, Mun, & Chen, 2012; Yaacob, Rasli, Senin, & Othman, 2011). Despite the benefits, various issues have emerged related to such initiatives which include barriers to commercialising research, facilitation of

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